

DRAFT

SITE-SPECIFIC
HEALTH AND SAFETY PLAN
FOR
BAYONNE BARREL AND DRUM
NEWARK, NEW JERSEY

Prepared for:

United States Environmental Protection Agency Region II - Removal Action Branch Edison, New Jersey

Prepared by:

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SECTION 1.0 INTRODUCTION

OHM Remediation Services Corp. (OHM) is pleased to present this Health and Safety Plan (HASP) which has been developed for the U.S. Environmental Protection Agency, Bayonne Barrel & Drum Site, City of Bayonne, Essex County, New Jersey. This HASP is intended to protect on site personnel, visitors, and the public from physical harm and exposure to hazardous substances. The procedures and guidelines contained herein are based upon the best available information at the time of the plan's preparation. Specific requirements will be revised by the On-Scene Coordinator (OSC) when new information is received or conditions change. Any amendments to this plan will be documented in the Appendix.

Although the plan focuses on the specific work activities planned for this site, it must remain flexible because of the nature of this work. Conditions may change and unforeseen situations may arise that require deviations from the original plan. This flexibility allows modification by the OHM supervisors and health and safety officials with approval from the project CIH.

1.1 SITE HISTORY

The Bayonne Barrel & Drum (BBD) is located at 150-154 Raymond Boulevard in Newark, Essex County, New Jersey. BBD occupies approximately 15 acres of Block 5002, lots 3&14. The site, formerly the location of a drum reconditioning facility, is bounded by Raymond Boulevard and an exit ramp from Routes 1 & 9 to the north & west, an entrance ramp to the New Jersey Turnpike to the East & South, and the parking lot of a movie theater to the south west. The nearest residence to the site is located approximately 1/2 mile away.

According to an EPA ESD report, when the facility was operating, drum cleaning operations involved both closed head and open head drums. In closed head cleaning, chains and caustic solution was used to wash out previous material in the drums. The spent solution drained through an oil water separator and into a holding tank. An incinerator burned out any residue from the cleaning process which was left behind.

Currently, all of the original buildings which existed during the facility's operations remain standing. There are three vertical storage tanks, underground storage tanks, ash piles, shredded tires, 350 drums which contain materials, and 45,000 RCRA empty drums on the property. Hazardous materials which are believed to be on the property include Ethyl Benzene, Toluene, PCB's, Cadmium, Chromium, Copper, Lead, and Zinc.

1.2 SCOPE OF WORK

OHM understands the ultimate scope of work to include:

- Stabilize and sample drums
- Sample all aboveground and underground storage tanks
- Perform field haz-cat testing on all samples
- Provide analytical testing for disposal as required
- Prepare a final project report

SECTION 2.0 KEY PERSONNEL AND MANAGEMENT

The USEPA On-Scene Coordinator (OSC), Project Manager (PM), Site Supervisor (SS), Certified Industrial Hygienist (CIH) and Site Safety Officer (SSO) are responsible for formulating and enforcing health and safety requirements, and implementing the HASP.

2.1 ON-SCENE COORDINATOR

The OSC as the representative of the U.S Environmental Protection Agency (EPA), is responsible for the overall project administration and coordinating health and safety standards for all individuals on site at all times. All applicable Occupational Health and Safety Administration standards shall be observed. However, each contractor (as an employer under OSHA) is responsible for the health and safety of its employees.

2.2 SITE SAFETY OFFICER

The SSO has responsibility for administering the HASP relative to site activities, and will be in the field full-time while site activities are in progress. The SSO's primary operational responsibilities will be monitoring, including personal and environmental monitoring, personal protective equipment maintenance, and assignment of protection levels. The SSO will be the main contact in any on-site emergency situation. The SSO will direct all field activities involved with safety and be responsible for stopping work when unacceptable health or safety risk exists. The SSO is responsible for assuring that all on-site personnel understand and comply with all safety requirements. The foreman will assume the SSO responsibilities for this project.

2.3 PROJECT MANAGER

The PM has the overall responsibility for the project and to assure that the goals of the construction remedial action are attained in a manner consistent with the HASP requirements. The PM will coordinate with the SS and the SSO to assure that the remedial action goals are completed in a manner consistent with the HASP.

2.4 SITE SUPERVISOR

The SS is responsible for field implementation of the HASP. The SS will establish and ensure compliance with site control areas and procedures and coordinate these supervisory responsibilities with the site SSO.

2.5 RESPONSE MANAGER (ERCS)

The RM (ERCS) is responsible for field implementation of the HASP and Site Emergency Response and Contingency) Plan. The RM is responsible for field implementation of the HASP. The R< will establish and ensure compliance with site control areas and procedures and coordinate these supervisory responsibilities with the SSO.

OHM Project 16441HS

Bayonne Barrel and Drum

July 18, 1994
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2.6 TECHNICAL ASSISTANCE TEAM (TAT)

The technical Assistance Team (TAT) is responsible for providing the OSC with assistance and support in regard to all technical, regulatory, and safety aspects of site activity. TAT is also available to advise the OSC on matters related to sampling, treating, packaging, labeling, transporting, and disposing of the hazardous wastes found on site.

2.7 KEY SAFETY PERSONNEL

The following individuals share responsibility for health and safety at the site.

Site Supervisor

Gene Gommer

(609) 584-8900

Site Safety Officer

TBD

Project Manager

Tom O'Hara

609-588-6395 (office)

800-759-7243 #2040535 (pager)

NER Health and Safety

Manager

Kevin McMahon, M.S., CIH

609-588-6375 (office)

609-421-7523 (pager)

Vice President, Health

and Safety

Fred Halvorsen, Ph.D., PE, CIH

800-231-7031

SECTION 3.0 JOB HAZARD ANALYSIS

This section outlines the potential chemical and physical hazards which workers may be exposed to during work on this project. This is a representative list of hazardous materials present at this site. Other chemicals may be represent at the site which have not yet been identified. Unless a material is identified by a valid label, it shall be considered as unknown and treated as such.

3.1 CHEMICAL HAZARDS

The chemicals at this site are that of a drum reconditioning plant. ethyl benzene, toluene, PCB's cadmium, chromium, copper, lead and zinc are suspected at the site. Table 3.1 lists these potential chemical hazards.

Personnel will be removed from the work site and placed under observation immediately if the following initial symptoms persist:

- Dizziness or stupor
- Nausea, headaches, or cramps
- Irritation of the eyes, nose, or throat
- Euphoria
- Chest pains and coughing
- Rashes or burns

3.2 PHYSICAL HAZARDS

To minimize physical hazards, OHM has developed standard safety protocols which will be followed at all times. Failure to follow safety protocols will result in expulsion of a crew member from the site.

All OHM personnel are familiar with the field activities which will be conducted at the site. They are trained to work safely under various field conditions. The SS and SSO will observe the general work practices of each crew member and equipment operator, and enforce safe procedures to minimize physical hazards. Also, hard hats, safety glasses, and steel-toe safety boots are required in all areas of the site.

3.3 ENVIRONMENTAL HAZARDS

Environmental factors such as weather, wild animals, insects, and irritant plants always pose a hazard when performing outdoor tasks. The SSO and SS will make every effort to alleviate these hazards should they arise.



TABLE 3.1 CHEMICAL HAZARDS				
CHEMICAL	EXPOSURE ROUTES	PEL/ TLV	HEALTH HAZARDS/ PHYSICAL HAZARDS	
Ethyl benzene	Skin, Eye Inhalation,	100 ppm or 435	Irritation and burning of skin and eyes, upper respiratory system irritation, CNS damage	
	Ingestion mg/m ³		reacts with strong oxidizers	
Toluene	Inhalation, or		can produce CNS damage, liver damage, kidneys, and irritates the skin	
Ingestion		375 mg/m ³	chemical is very reactive with strong oxidizers	
PCB	Skin, Inhalation,	.001mg/m3	contact with skin may cause local irritation; inhalation may cause chloracne, liver damage	
•	Ingestion		avoid contact with strong oxidizers	
cadmium	Skin Inhalation, Ingestion	50 mg/m3	irritates respiratory system, can damage kidneys, prostrate, blood	
			avoid contact with strong oxidizers and sulfur	

3.3.1 Heat Stress

The combination of warm ambient temperature and protective clothing increases the potential for heat stress. In particular:

- Heat rash
- Heat cramps
- Heat exhaustion
- Heat stroke

Heat stress is covered in detail during our 40-hour OSHA 29 CFR 1910.120 approved pre-employment course. In addition, this information is discussed during safety meetings before each workday. Workers are encouraged to increase consumption of water and electrolyte-containing beverages such as Gatorade.

At a minimum, workers will break every 2 hours for 10- to 15-minute rest periods. In addition, workers are encouraged to take rests whenever they feel any adverse effects that may be heat-related. The frequency of breaks may need to be increased upon worker recommendation to the SSO and SS.

A work/rest schedule can be calculated based on heat stress monitoring results. Monitoring consists of taking the radial pulse of a worker for 30 seconds immediately after exiting the work area. The frequency of monitoring is provided herein.



AMBIENT TEMPERATURE	LEVEL D PPE	LEVEL C PPE/ MODIFIED LEVEL D
90° F or above	After 45 minutes of work	After 15 minutes of work
87.5 F-90 F	After 60 minutes of work	After 30 minutes of work
82.5-87.5 F	After 90 minutes of work	After 60 minutes of work
77.5-82.5 F	After 120 minutes of work	After 90 minutes of work
72.5-77.5 F	After 150 minutes of work	After 120 minutes of work

If the heart rate exceeds 110 beats per minute at the beginning of the rest period, shorten the next work cycle by 1/3 and keep the rest period the same. If the heart rate still exceeds 110 beats per minute at the next rest period, increase the following rest period by 1/3. The initial rest period should be at least 5 minutes.

Monitoring for heat stress will begin when the ambient temperature reaches or exceeds 70 degrees Fahrenheit, when wearing Level C PPE, or 80 degrees Fahrenheit for site activities performed in Level D.

3.3.2 Exposure to Cold

With outdoor work in the winter months, the potential exists for hypothermia and frostbite.

Protective clothing greatly reduces the possibility of hypothermia in workers. However, personnel will be instructed to wear warm clothing and to stop work to obtain more clothing if they become too cold. Employees will also be advised to change into dry clothes if their clothing becomes wet from perspiration or from exposure to precipitation.

In cold weather, the potential for frostbite exists, especially in body extremities. Personnel will be instructed to pay particular attention to hands, feet, and any exposed skin when dressing. Personnel will be advised to obtain more clothing if they begin to experience loss of sensation due to cold exposure.

Employees will be encouraged to use the heated shelters on site at regular intervals depending upon the severity of ambient temperatures. Symptoms of cold stress, including heavy shivering, excessive fatigue, drowsiness, irritability, or euphoria necessitate immediate return to the shelter.

3.3.3 Biological Hazards

• POISON IVY (Rhus Radicans)

Poison Ivy may be found at the site. It is highly recommended that all personnel entering into an area with poison ivy wear a minimum of a paper tyvek, to avoid skin contact.

Contact with poisonous plants:

Characteristic reactions



The majority of skin reactions following contact with offending plants are allergic in nature and characterized by:

- General symptoms of headache and fever
- Itching
- Redness
- A rash

Some of the most common and most severe allergic reactions result from contact with plants of the poison ivy group, including poison oak and poison sumac. Such plants produce severe rash characterized by redness, blisters, swelling, and intense burning and itching. The victim may develop a high fever and feel very ill. Ordinarily, the rash begins within a few hours after exposure, but may be delayed 24 to 48 hours.

Distinguishing Features of Poison Ivy Group Plants

The most distinctive features of poison ivy and poison oak are their leaves, which are composed of three leaflets each. Both plants have greenish-white flowers and berries that grow in clusters.

First Aid

- a. Remove contaminated clothing; wash all exposed areas thoroughly with soap and water, followed by rubbing alcohol.
- b. Apply calamine or other soothing lotion if rash is mild.
- c. Seek medical advice if a severe reaction occurs, or if there is a known history of previous sensitivity.

TICKS

Heavily vegetated areas of a site may have ticks. It is highly recommended that all personnel walking through such areas wear a minimum of a paper tyvek and latex boot covers. The ticks will stand out against the light colors. A tick repellent or insect containing DEET is also suggested.

Ticks can transmit several diseases, including Rocky Mountain spotted fever, a disease that occurs in the eastern portion of the United States as well as the western portion, and Lyme disease. Ticks adhere tenaciously to the skin or scalp. There is some evidence that the longer an infected tick remains attached, the greater is the chance that it will transmit disease.

First Aid

- a. Cover the tick with heavy oil (mineral, salad, or machine) to close its breathing pores. The tick may disengage at once; if not, allow oil to remain in place for a half hour. Carefully (slowly and gently) remove the tick with tweezers, taking care that all parts are removed.
- b. With soap and water, thoroughly, but gently, scrub the area from which the tick has been removed, because disease germs may be present on the skin; also wipe the bite area with an antiseptic. Although use of tweezers for the removal of the tick and application of heat to the tick's body often have been attempted, these methods may leave tick parts in the wound or may injure the skin.
- c. If you have been bitten, place the tick in a jar labeled with the date, location of the bite, and the location acquired. If any symptom appears, such as an expanding red rash, contact a physician immediately.



LYME DISEASE

Lyme disease may cause a number of medical conditions, including arthritis, that can be treated if you recognize the symptoms early and see your doctor. Early signs may include a flu-like illness, an expanding skin rash and joint pain. If left untreated, Lyme disease can cause serious nerve and heart problems as well as a disabling type of arthritis.

You are more likely to spot early signs of Lyme disease rather than see the tick or its bite. This is because the tick is so small (about the size of the head of a common pin or a period on this page and a little larger after they fill with blood), you may miss it or signs of a bite. However, it is also easy to miss the early symptoms of Lyme disease.

In its early stage, Lyme disease may be a mild illness with symptoms like the flu. It can include a stiff neck, chills, fever, sore throat, headache, fatigue, and joint pain. But this flu-like illness is usually out of season, commonly happening between May and October when ticks bite.

Most people develop a large, expanding skin rash around the area of the bite. Some people may get more than one rash. The rash may feel hot to the touch and may be painful. Rashes vary in size, shape, and color, but often look like a red ring with a clear center. The outer edges expand in size. Its easy to miss the rash and the connection between the rash and the tick bite. The rash develops from three days to as long as a month after the tick bite. Almost one third of those with Lyme disease never get the rash.

Joint or muscle pain may be another early sign of Lime disease. These aches and pains may be easy to confuse with the pain that comes from other types of arthritis. However, unlike many other types of arthritis, this pain seems to move or travel from joint to joint.

In later stages, Lyme disease may be confused with other medical problems. These problems can develop months to years after the first tick bite.

Early treatment of Lyme disease symptoms with antibiotics can prevent the more serious medical problems of later stages. If you suspect that you have symptoms of Lime disease, contact your doctor.

Lyme disease can cause problems with the nervous system that look like other diseases. These include symptoms of stiff neck, severe headache, and fatigue usually linked to meningitis. They may also include pain and drooping of the muscles on the face, called Bell's Palsy. Lyme disease can also mimic symptoms of multiple sclerosis or other types of paralysis.

Lyme disease can also cause serious but reversible heart problems, such as irregular heart beat. Finally, Lyme disease can result in a disabling, chronic type of arthritis that most often affects the knees. Treatment is more difficult and less successful in later stages. Researchers think these more serious problems may be linked to how the body's defence or immune system responds to the infection.



3.4 TASK-SPECIFIC RISK ASSESSMENT

3.4.1 ACTIVITY HAZARD ANALYSIS SOLIDS AND CONTAINER SAMPLING				
TASK BREAKDOWN POTENTIAL HAZARDS		HAZARD CONTROL MEASURES		
Soil and Container Sampling	Sharp Objects	 Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects Maintain all hand and power tools in a safe condition Keep guards in place during use 		
	Handling Heavy Objects	 Observe proper lifting techniques Obey sensible lifting limits Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads 		
	Slips, Trips, Falls	 Clear, walkways of equipment, vegetation, excavated material, and debris Mark, identify, or barricade other obstructions 		
	Inhalation and Contact with Hazardous Substances	Provide workers proper skin, eye and respiratory protection based on the exposure hazards present		
	High Ambient Temperature	Monitor for Heat stress in accordance with OHM Health and Safety Procedures Manual		





3.4.2	ACTIVITY HAZARD A	NALYSIS FOR PUMP & TRANSFER OPERATIONS
TASK BREAKDOWN	POTENTIAL HAZARDS	HAZARD CONTROL MEASURES
Pump & Transfer Sludges	Inhalation & Contact with Hazardous Substances	Provide workers proper skin, eye, respiratory & splash protection based on the exposure hazards present
	Electrical Shock	 De-energize or shut off utility lines at their source before work begins Use double insulated or properly grounded electric power-operated tools Maintain tools in a safe condition Provide an equipment-grounding conductor program or employ ground-fault circuit interrupters Use qualified electricians to hook up electrical circuits Inspect all extension cords daily for structural integrity, ground continuity, and damaged insulation Cover or elevate electric wire or flexible cord passing through work areas to protect from damage Keep all plugs and receptacles out of water Use approved water-proof, weather-proof type if exposure is likely Inspect all electrical power circuits prior to commencing work Follow Lockout-Tagout procedures in accordance with OHM Health and Safety Procedures Manual
	Caught In/ Between Moving Parts	 Provide and use proper work gloves when the possibility of crush, pinch, or other injury may be caused by moving/stationary edges or objects Maintain all equipment in a safe condition Keep all guards in place during use De-energize and lock-out machinery before maintenance or service



3.4.2 ACTIVITY HAZARD ANALYSIS FOR PUMP & TRANSFER OPERATIONS				
TASK BREAKDOWN POTENTIAL HAZARDS		HAZARD CONTROL MEASURES		
Pump & Transfer Sludges (Continued)	Fires	 Eliminate sources of ignition from the work area Smoking is prohibited Provide ABC (or equivalent) fire extinguishers in all work and flammable storage areas Store flammable liquids in well ventilated areas Post "NO SMOKING" signs Store combustible materials away from flammables Store all compressed gas cylinders upright, caps in place when not in use Separate Flammables and Oxidizers by 20 feet 		
	Flammable, Toxic, Oxygen deficient Atmospheres (Confined Space Entry)	 Test vessel atmosphere for flammable/toxic vapors, and oxygen deficiency Wear proper level of PPE for the type of atmospheric contaminants Use body harness, safety belt with tripod wench for possible rescue Obtain Confined Space Entry Permit signed by Supervisor/Safety Officer De-energize, lock-out and tag all energized equipment Provide safety observer outside vessel Provide written rescue plan Review emergency procedures before work commences 		
	Slips, Trips, & Falls	 Clear walkways of equipment, ground debris, & other materials Mark, identify, or barricade other obstructions 		
	High/Low Ambient Temperature	Monitor for heat/cold stress in accordance with OHM Health & Safety Procedures Manual		
	Sharp Objects	 Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects Maintain all hand and power tools in a safe condition Keep guards in place during use 		



3.4.4 ACTIVITY HAZARD ANALYSIS FOR DRUM HANDLING ACTIVITIES				
TASK BREAKDOWN POTENTIAL HAZARDS		HAZARD CONTROL MEASURES		
Staging/Overpacking Drums	Handling Heavy Objects	 Observe proper lifting techniques Obey sensible lifting limits Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads 		
	Slips, Trips, Falls	 Clear, walkways of equipment, vegetation, excavated material Mark, identify, or barricade other obstructions 		
	Fire/Explosion	 Eliminate sources of ignition from the work area Smoking is prohibited Provide ABC (or equivalent) fire extinguishers in all work and flammable storage areas Store flammable liquids in well ventilated areas Post "NO SMOKING" signs Store combustible materials away from flammables Store, all compressed gas cylinders upright, caps in place when not in use Separate Flammables and Oxidizers by 20 feet 		
:	Sharp Objects	 Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects Maintain all hand and power tools in a safe condition Keep guards in place during use 		
	Struck by, Against Heavy Equipment, Protruding Objects, Splashes	 Use reflective warning vests worn when exposed to vehicular traffic Avoid equipment swing areas Make eye contact with operators before approaching equipment Understand and review posted hand signals Wear proper PPE for hazardous liquids present 		
-	Inhalation and Contact with Hazardous Substances	Provide workers proper skin, eye and respiratory protection based on the exposure hazards present		



3.4.4	ACTIVITY HAZAR	RD ANALYSIS FOR DRUM HANDLING ACTIVITIES		
TASK BREAKDOWN	POTENTIAL HAZARDS	HAZARD CONTROL MEASURES		
	High/Low Ambient Temperature	Monitor for Heat/Cold stress in accordance with OHM Health and Safety Procedures Manual		
Drum Crushing Slips, Trips, Falls		 Clear, walkways of equipment, vegetation, excavated material Mark, identify, or barricade other obstructions 		
	Sharp Objects	 Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects Maintain all hand and power tools in a safe condition Keep guards in place during use 		
	Caught In/ Between Moving Parts, Drums	 Provide and use proper work gloves when the possibility of crush, pinch, or other injury may be caused by moving/stationary edges or objects Maintain all equipment in a safe condition Keep all guards in place during use De-energize and lock-out machinery before maintenance or service 		
	Struck by, Against Heavy Equipment, Protruding Objects, Flying Debris	 Use reflective warning vests worn when exposed to vehicular traffic Avoid equipment swing areas Make eye contact with operators before approaching equipment Understand and review posted hand signals 		



3.4.5 ACTIVITY HAZARD ANALYSIS FOR LAB PACKING				
TASK BREAKDOWN POTENTIAL HAZARDS		HAZARD CONTROL MEASURES		
Lab Packing, Small Container Handling	Handling Heavy Objects	 Observe proper lifting techniques Obey sensible lifting limits Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads 		
	Slips, Trips, Falls	 Clear, walkways of equipment, vegetation, excavated material, and debris Mark, identify, or barricade other obstructions 		
Lab Packing, Small Container Handling (Continued)	Fire/ Explosion	 Eliminate sources of ignition from the work area Smoking is prohibited Provide ABC (or equivalent) fire extinguishers in all work and flammable storage areas Store flammable liquids in well ventilated areas Post "NO SMOKING" signs Store combustible materials away from flammables Store, all compressed gas cylinders upright, caps in place when not in use Separate Flammables and Oxidizers by 20 feet 		
	Sharp Objects	 Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects Maintain all hand and power tools in a safe condition Keep guards in place during use 		
	Struck by, Against Heavy Equipment, Protruding Objects, Flying Debris, Splashes	 Use reflective warning vests worn when exposed to vehicular traffic Avoid equipment swing areas Make eye contact with operators before approaching equipment Understand and review posted hand signals Wear proper PPE for hazardous liquids present 		
	Inhalation and Contact with Hazardous Substances	Provide workers proper skin, eye and respiratory protection based on the exposure hazards present		



JOB HAZARD ANALYSIS

3.4.5 ACTIVITY HAZARD ANALYSIS FOR LAB PACKING		
TASK BREAKDOWN	POTENTIAL HAZARD CONTROL MEASURES HAZARDS	
	High Ambient Temperature	Monitor for Heat stress in accordance with OHM Health and Safety Procedures Manual

SECTION 4.0 WORK AND SUPPORT AREAS

To prevent migration of contamination caused through tracking by personnel or equipment, work areas and personal protective equipment will be clearly specified prior to beginning operations. OHM has designated work areas or zones as suggested by the NIOSH/OSHA/USCG/EPA'S document titled, "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities." Each work area will be divided into three zones as follows:

- An Exclusion or "hot" Zone (EZ)
- A Contamination-Reduction Zone (CRZ)
- A Support Zone (SZ)

4.1 EXCLUSION ZONE

The EZ is the area suspected of contamination and presents the greatest potential for worker exposure. Personnel entering the area must wear the mandated level of protection for that area. In certain instances, different levels of protection will be required depending on the tasks and monitoring performed within that zone.

4.2 CONTAMINATION-REDUCTION ZONE

The CRZ or transition zone will be established between the EZ and SZ. In this area, personnel will begin the sequential decontamination process required to exit the EZ. To prevent off-site migration of contamination and for personnel accountability, all personnel will enter and exit the EZ through the CRZ.

4.3 SUPPORT ZONE

The SZ serves as a clean, control area. Operational support facilities are located within the SZ. Normal work clothing and support equipment are appropriate in this zone. Contaminated equipment, or clothing will not be allowed in the SZ. The support facilities should be located upwind of site activities. There will be a clearly marked controlled access point from the SZ into the CRZ and EZ that is monitored closely by the SSO and the SS to ensure proper safety protocols are followed.

4.4 **GENERAL**

The following items are requirements to protect the health and safety of workers and will be discussed in the safety briefing prior to initiating work on the site.

- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the
 probability of hand to mouth transfer and ingestion of contamination is prohibited in
 the EZ and CRZs.
- Hands and face must be washed upon leaving the EZ and before eating, drinking, chewing gum or tobacco and smoking or other activities which may result in ingestion of contamination.
- A buddy system will be used. Hand signals will be established to maintain communication.



- During site operations, each worker will consider himself as a safety backup to his partner. Off-site personnel provide emergency assistance. All personnel will be aware of dangerous situations that may develop.
- Visual contact will be maintained between buddies on site when performing hazardous duties.
- No personnel will be admitted to the site without the proper safety equipment, training, and medical surveillance certification.
- All personnel must comply with established safety procedures. Any staff member who
 does not comply with safety policy, as established by the SSO or the SS, will be
 immediately dismissed from the site.
- Proper decontamination procedures must be followed before leaving the site.
- All employees and visitors must sign in and out of the site.

SECTION 5.0 PROTECTIVE EQUIPMENT

This section addresses the various levels of personal protective equipment (PPE) which are or may be required at this job site. OHM personnel are trained in the use of all PPE utilized.

5.1 ANTICIPATED PROTECTION LEVELS

TASK	PROTECTION LEVEL	COMMENTS/MODIFICATIONS
Drum, Container Sampling	Level B	Continuously monitor sampling areas
Lab Packing	Level C	Monitor any spills, air monitor areas
CRZ Workers	Level D	
SZ Workers	Level D	

5.2 PROTECTION LEVEL DESCRIPTIONS

This sections lists the minimum requirements for each protection level. Modification to these requirements will be noted above.

5.2.1 <u>Level D</u>

Level D consists of the following:

- Safety glasses with side shields
- Hard hat
- Steel-toed work boots
- Work clothing as prescribed by weather

5.2.2 Modified Level D

Modified Level D consists of the following:

- Safety glasses with side shields
- Hard hat
- Steel-toed work boots
- Nitrile, neoprene, or PVC overboots



- Outer nitrile, neoprene, or PVC gloves over latex sample gloves
- Face shield (when projectiles or splashes pose a hazard)
- Tyvek coverall [Saranex Tyveks (Sarans) and PVC acid gear will be required when workers have a potential to be exposed to contaminated liquids or sludges.]

5.2.3 <u>Level C</u>

Level C consists of the following:

- Full-face, air-purifying respirator with GMC-H cartridges
- Hooded Tyvek coveralls and Saranex Tyveks (Sarans) (PVC acid gear will be required when workers have a potential to be exposed to contaminated liquids or sludges.)
- Hard hat
- Steel-toed work boots
- Nitrile, neoprene, or PVC overboots
- Nitrile, neoprene, or PVC gloves over latex sample gloves
- Face shield (when projectiles or splashes pose a hazard)

5.2.4 <u>Level B</u>

Level B protection consists of the items required for Level C protection with the exception that an air-supplied respirator is used in place of the air-purifying respirator.

5.2.5 Level A

Level A protection consists of the items required for Level B protection with the addition of a fully-encapsulating, vapor-proof suit capable of maintaining positive pressure.

5.3 SUPPLIED-AIR RESPIRATORS

If air monitoring shows that Level B protection is needed, OHM personnel will wear Survivair 9881-02 Hippack Airline respirators with 5-minute egress bottles. Personnel requiring Level "B" protection and high mobility will wear Survivair Mark 2 SCBA units.



5.4 BREATHING-AIR QUALITY

Code of Federal Regulations 29 CFR 1910.134 states breathing air will meet the requirement of the specification for Grade D breathing air as described in the ANSI/CGA Specification G-7.1-1989. OHM requires a certificate of analysis from vendors of breathing air in order to show that the air meets this standard.

5.5 <u>AIR-PURIFYING RESPIRATORS</u>

OHM's air-purifying respirators are the MSA "Ultra-Twin" full-face respirators.

5.6 RESPIRATOR CARTRIDGES

The crew members working in Level C will wear respirators equipped with MSA GMC-H air-purifying cartridges, unless otherwise noted. The GMC-H cartridge holds approval for:

- Organic vapors <1,000 ppm
- Chlorine gas <10 ppm
- Hydrogen chloride <50 ppm
- Sulfur dioxide <50 ppm
- Dusts, fumes and mists with a TWA <0.05 mg/m³
- Asbestos-containing dusts and mists
- Radionuclides

5.7 CARTRIDGE CHANGES

All cartridges will be changed a minimum of once daily. However, water saturation of the HEPA filter or dusty conditions may necessitate more frequent changes. Changes will occur when personnel begin to experience increased inhalation resistance or breakthrough of a chemical warning property.

5.8 INSPECTION AND CLEANING

Respirators are checked periodically by a qualified individual and inspected before each use by the wearer. All respirators and associated equipment will be decontaminated and hygienically cleaned after use.

5.9 FIT TESTING

Annual respirator fit tests are required of all personnel wearing negative-pressure respirators. The test will use isoamyl acetate or irritant smoke. The fit test must be for the style and size of the respirator to be used.

5.10 FACIAL HAIR

No personnel who have facial hair which interferes with the respirator's sealing surface will be permitted to wear a respirator and will not be permitted to work in areas requiring respirator use.



5.11 CORRECTIVE LENSES

Normal eyeglasses cannot be worn under full-face respirators because the temple bars interfere with the respirator's sealing surfaces. For workers requiring corrective lenses, special spectacles designed for use with respirators will be provided.

5.12 CONTACT LENSES

Contact lenses will not be worn with any type of respirator.

5.13 MEDICAL CERTIFICATION

Only workers who have been certified by a physician as being physically capable of respirator usage will be issued a respirator. Personnel unable to pass a respiratory fit test or without medical clearance for respirator use will not be permitted to enter or work in areas on site that require respiratory protection. Employees receive a written physicians opinion that they are fit for general hazardous waste operations as per 29 CFR 1910.120(f)(7).

5.14 SITE-SPECIFIC RESPIRATORY PROTECTION PROGRAM

The primary objective of respiratory protection is to prevent atmospheric contamination. When engineering measures to control contamination are not feasible, or while they are being implemented, personal respiratory protective devices will be used.

The criteria for determining respirator need are contained in Section 7.0 of this HASP. The GMC-H cartridges will protect employees from the hazardous substances specific to this site. All respirator users are OSHA trained in proper respirator use and maintenance. The SS and SSO will observe workers during respirator use for signs of stress and will monitor air levels of contaminants to ensure that respiratory protection is sufficient. The SS, CIH, and SSO will also evaluate this HASP weekly to determine its continued effectiveness.

All respirators and cartridges used will provide adequate protection against the hazards for which they were designed in accordance with applicable standards. All persons assigned to use respirators will have medical clearance to do so.

SECTION 6.0 DECONTAMINATION PROCEDURES

This section describes the procedures necessary to ensure that both personnel and equipment are free from contamination when they leave the work site.

6.1 PERSONNEL DECONTAMINATION

Decontamination procedures will ensure that material which workers may have contacted in the EZ does not result in personal exposure and is not spread to clean areas of the site. This sequence describes the general decontamination procedure. The specific stages will vary depending on the site, the task, the protection level, etc.

- 1. Go to end of EZ
- 2. Wash outer boots and gloves in detergent solution
- 3. Rinse outer boots and gloves in water
- 4. Remove outer boots and let dry
- 5. Remove outer gloves and let dry
- 6. Cross into CRZ
- 7. Wash splash suit
- 8. Rinse splash suit
- 9. Remove splash suit and let dry
- 10. Remove booties and discard
- 11. Remove sample gloves and discard
- 12. Remove Saranex Tyvek suit and discard
- 13. Remove sample gloves and discard
- 14. Remove and wash respirator
- 15. Rinse respirator and hang to dry
- 16. Remove sample gloves and discard
- 17. Remove Tyvek and discard
- 18. Remove booties and discard
- 19. Remove sample gloves and discard

6.1.1 Suspected Contamination

Any employee suspected of sustaining skin contact with chemical materials will first use the emergency shower. Following a thorough drenching, the worker will proceed to the decontamination facility. Here the worker will remove clothing, shower, don clean clothing, and immediately be taken to the first-aid station.

6.1.2 Personal Hygiene

Before any eating, smoking, or drinking, personnel will wash hands, arms, neck and face,

6.2 EQUIPMENT DECONTAMINATION

All contaminated equipment will be decontaminated before leaving the site. Decontamination procedures will vary depending upon the contaminant involved, but may include sweeping, wiping, scraping, hosing, or steaming the exterior of the equipment. Personnel performing this task will wear the proper PPE as prescribed by the SSO.



6.3 DISPOSAL

All liquids and disposable clothing will be treated as contaminated waste and disposed of properly.

SECTION 7.0 AIR MONITORING

Air monitoring will be conducted in order to determine airborne contamination levels. This ensures that respiratory protection is adequate to protect personnel against the chemicals that are encountered. The following air monitoring efforts will be used at this site. Additional air monitoring may be conducted at the discretion of the SSO.

The following chart describes the air monitoring required and appropriate action levels.

Monitoring Device	Action Level	Action
LEL/O ₂	>10% LEL <20.8% O ₂	Evacuate area, ventilate, upgrade to Level B if necessary, continue to monitor
PID	1-5 ppm unknowns	Level C
	5-100 ppm unknowns	Level B
	>100 ppm unknowns	Level A
OVA	1-5 ppm unknowns 5-500 ppm unknowns over 500 ppm unknowns	Level C Level B Level A

7.1 LOWER EXPLOSIVE LIMIT/OXYGEN (LEL/O2) METER

Prior to entering a confined-space area or hot work involving welding, cutting, or other high heatproducing operations where flammable or combustible vapors may be present, LEL/O₂ measurements will be taken.

7.2 PHOTOIONIZATION DETECTOR (PID)

A PID will be used to monitor total ionizable organic content of the ambient air. A PID will prove useful as a direct reading instrument to aid in determining if respiratory protection needs to be upgraded and to define the EZ.

For known contaminants only, to determine a protection level from PID data, the SSO will multiply the TLV of the known compound by 25. This is the limit for Level C protection for that compound. If PID readings exceed 25 times the TLV, Level B protection will be required. Also, regardless of the TLV, a PID reading of 1,000 ppm or more will indicate that the GMC-H cartridges may become overloaded and will necessitate Level B protection. (Note: PID readings do not always indicate the actual air concentration of a compound. Consult the manual, HNU, or the CIH for clarification.)

The SSO will take measurements before operations begin in an area to determine the amount of organic compounds naturally occurring in the air. This is referred to as a background level.



Levels of volatile organic compounds will be measured in the air at active work sites once every hour and at the support zone once every hour when levels are detected above background in the exclusion zone. If levels exceed background at any time in the support zone, work in the exclusion zone will cease and corrective actions will be taken, e.g., cover soil with polyethylene sheeting, applying vapor-suppressing foam to soil. Work will not resume until levels are below background in the support zone.

7.3 AIR MONITORING LOG

The SSO will ensure that all air-monitoring data is logged into a monitoring notebook. Data will include instrument used, wind direction, work process, etc. The Regional and Corporate OHM CIH will periodically review this data.

7.4 CALIBRATION REQUIREMENTS

The PID, LEL/O₂ meter and sampling pumps required with fixed-media air sampling will be calibrated daily prior to use. A separate log will be kept detailing date, time, span gas, or other standard, and name of person performing the calibration.

7.5 AIR MONITORING RESULTS

Air monitoring results will be posted for personnel inspection, and will be discussed during morning safety meetings.

SECTION 8.0 EMERGENCY RESPONSE

Prior to field activities, the SS will plan emergency egress routes and discuss them with all field personnel.

8.1 EMERGENCY SERVICES

A tested system will exist for rapid and clear distress communication. All personnel will be provided concise and clear directions and accessible transportation to local emergency services. A map outlining directions to the nearest hospital will be posted on site.

The following emergency equipment will be present on the site:

- Fire extinguishers
- Industrial first-aid kit
- Eye wash bottles
- Emergency shower

8.2 COMMUNICATION

Each member of the site entry team will be able to communicate with another entry team member at all times. Communications may be by way of the following methods:

- Sound (air horn)
- Electronic (radio, bull horn)
- Visual (hand signals)

The following standard hand signals will be mandatory for all employees regardless of other means of communication:

- Hand gripping throat--Out of air, cannot breath
- Hands on top of head--Need assistance
- Thumbs up--OK, I'm alright, I understand
- Thumbs down--No, negative
- Gripping partner's wrist, or gripping both hands on wrist--Leave area immediately

8.3 <u>EMERGENCY EVACUATION FROM EXCLUSION AND CONTAMINATION-</u> <u>REDUCTION ZONES</u>

Any personnel requiring emergency medical attention will be evacuated immediately from EZ and CRZ. Personnel will not enter the area to attempt a rescue if their own lives would be threatened. The SS and SSO decision whether or not to decontaminate a victim prior to evacuation is based on the type and severity of the injury and the nature of the contaminant.

If decontamination cannot be performed because it may aggravate the injury or delay life-saving treatment, the emergency response personnel will:

 Wrap the victim in blankets or plastic to reduce contamination of other personnel and emergency vehicles.



- Alert emergency and medical personnel to potential contamination; instruct them about specific decontamination procedures.
- Send site personnel familiar with the incident to the hospital with the victim.

8.4 FIRST AID

Qualified personnel only will give first aid and stabilize an individual needing assistance. Professional medical assistance will be obtained at the earliest possible opportunity.

To provide first-line assistance to field personnel in the case of illness or injury, the following items will be made immediately available:

- First-aid kit
- Portable emergency eye wash
- Supply of clean water

8.5 EMERGENCY ACTIONS

If actual or suspected serious injury occurs, these steps will be followed:

- Remove the exposed or injured person(s) from immediate danger.
- Render first aid if necessary. Decontaminate affected personnel after critical first aid is given.
- Obtain paramedic services or ambulance transport to local hospital. This procedure will be followed even if there is no visible injury.
- Other personnel in the work area will be evacuated to a safe distance until the site supervisor determines that it is safe for work to resume. If there is any doubt regarding the condition of the area, work will not commence until all hazard-control issues are resolved.
- Notify client of incident.

8.6 GENERAL EVACUATION PLAN

In the general case of a large fire, explosion, or toxic vapor release, a site evacuation will be ordered and will follow these steps:

- Sound the applicable alarm and advise client representative.
- Evaluate the immediate situation and downwind direction. All personnel will evacuate in the upwind direction.
- All personnel will assemble in an upwind area. When the situation permits, a head count will be taken.



• Determine the extent of the problem. Dispatch a response team in protective clothing and self-contained breathing apparatus on site to evacuate any missing personnel or to correct the problem.

8.7 <u>EMERGENCY TELEPHONE NUMBERS</u>

The following telephone numbers will be posted at the site before work begins:

Fire Department: 911 OR 201-733-6245

Police Department: 911 OR 201-733-7491

Poison Control Center: 800-962-1253

Hospital: Beth Isreal Hospital, Lyons Ave. Newark, NJ

Hospital Phone Number: 201-926-7000

SECTION 9.0 TRAINING REQUIREMENTS

As a prerequisite to employment at OHM, all field employees are required to take a 40-hour training class and pass a written examination. This training covers all forms of personal protective equipment, toxicological effects of various chemicals, handling of unknown tanks and drums confined-space entry procedures, and electrical safety. This course is in full compliance with OSHA requirements in 29 CFR 1910.120. In addition, all employees receive annual 8-hour refresher training and supervisory personnel receive an additional 8-hour training in handling hazardous waste operations.

All personnel entering the exclusion zone will be trained in the provisions of this site safety plan and be required to sign the Site Safety Plan Acknowledgment in Appendix A.

SECTION 9.0 TRAINING REQUIREMENTS

As a prerequisite to employment at OHM, all field employees are required to take a 40-hour training class and pass a written examination. This training covers all forms of personal protective equipment, toxicological effects of various chemicals, handling of unknown tanks and drums confined-space entry procedures, and electrical safety. This course is in full compliance with OSHA requirements in 29 CFR 1910.120. In addition, all employees receive annual 8-hour refresher training and supervisory personnel receive an additional 8-hour training in handling hazardous waste operations.

All personnel entering the exclusion zone will be trained in the provisions of this site safety plan and be required to sign the Site Safety Plan Acknowledgment in Appendix A.

SECTION 10.0 MEDICAL SURVEILLANCE PROGRAM

All OHM personnel participate in a medical and health monitoring program. This program is initiated when the employee starts work with a complete physical and medical history and is continued on a regular basis. A listing of OHM's worker medical profile is shown below. This program was developed in conjunction with a consultant toxicologist. Other medical consultants are retained when additional expertise is required.

The medical surveillance program meets the requirements of the OSHA Standard 29 CFR 1910.120 (f).

TABLE 10.1 WORKER MEDICAL PROFILE			
Item	Initial	Annual	
Medical History	X	X.	
Work History	X	х	
Visual Acuity and Tonometry	X	x	
Pulmonary Function Tests	Х	·x	
Physical Examination	Х	х	
Audiometry Tests	Х	X	
Chest X-Ray	х	х	
Complete Blood Counts	Х	х	
Blood Chem. (SSAC-23 or equivalent)	х	X	
Urinalysis	X	х	
Dermatology Examination	X	х	
Electrocardiogram/Stress Test	x	X (based on age)	

Specific Tests (as required):

(PCB blood or fat, urine mercury, urine arsenic, urine phenol, urine halomethanes, blood cyanide, cholinesterase-pseudo-cholesterase, nerve conduction velocity tests, blood lead, urine lead.)

OHM Project 16441HS

Bayonne Barrel and Drum

July 18, 1994
Information herein is proprietary and confidential and to be used or released to others only with explicit written permission of OHM



10.1 EXAMINATION SCHEDULE

Employees are examined initially upon start of employment, annually thereafter, and may be examined upon termination of employment. Unscheduled medical examinations are conducted:

- At employee request after known or suspected exposure to toxic or hazardous materials
- At the discretion of the client, the CIH, SSO, or OHM occupational physician after known or suspected exposure to toxic or hazardous materials
- At the discretion of the OHM occupational physician

All nonscheduled medical examinations will include, as a minimum, all items specified above for periodic surveillance examination, with the exception of the chest X-ray, which will be conducted at the discretion of the occupational physician performing the examination.

APPENDIX A HEALTH AND SAFETY PLAN CERTIFICATION

HEALTH-AND-SAFETY PLAN CERTIFICATION

By signing this document, I am stating that I have read and understand the Site-Specific Health and Safety Plan for OHM Remediation Services Corp. personnel and visitors entering the Minsi Trail Road Site.

REPRESENTING	NAME (PRINT)	SIGNATURE	DATE
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APPENDIX B OHM HAZARD COMMUNICATION PROGRAM

APPENDIX B OHM HAZARD COMMUNICATION PROGRAM

1.0 GENERAL

The following written hazard communication program has been established for OHM Corporation. The purpose of this program is to transmit information about the various Chemical hazards in the work place to the workers using various media. The transmittal of information will be accomplished by means of a comprehensive hazard communication program, which will include container labeling and other forms of warning, material safety data sheets, and employee training in accordance with 29 CFR 1910.1200 and 29 CFR 1926.59.

The program will be available in corporate and regional Health and Safety Departments for reviews by all employees. It will also be available in the corporate library and clearly marked "Employee Right-to-Know" stations located within each individual shop and on each job site. OHM Corporation will accomplish the hazard communication requirements through formal safety training, departmental safety meetings, and job site safety meetings.

2.0 RESPONSIBILITIES

<u>Purpose</u>: Overall responsibility rests with all corporate officers of OHM Corporation. A brief outline of responsibilities for those persons directly involved with the program will follow. These responsibilities are not all inclusive, but are designed to give guidance in initial and long-term program development since each area is different. These responsibilities may vary.

<u>Scope</u>: This program is intended to cover those employees who are directly involved with the handling of hazardous materials or supervision of those activities.

2.1 Health and Safety Department Responsibilities

- Review operations with supervisors to determine what tasks require hazard communication training.
- Advise supervisory people as to which materials may need to be considered hazardous initially and eventually to ensure that hazard task determination is being done according to the written policy.
- 3. Follow up through safety meetings and safety audits to ensure that supervisors are carrying out prescribed company policy.
- 4. Notify supervisors of any operating changes affecting the hazardous materials being used.
- 5. Periodically audit the Hazard Communication Program's progress. Initially, this should be done biweekly, but later the audit may be done on a monthly or quarterly basis.

2.2 Training Department Responsibilities

- 1. Ensure that up-to-date records are maintained on training of all employees required to handle hazardous materials. The supervisor should keep copies of these records and should also send copies of the initial training to the corporate training secretary for the training file.
- 2. Educate personnel upon initial training to the requirements of the Hazard Communication Standard.

2.3 Supervisor Responsibilities

- 1. Identify jobs requiring the use of hazardous chemicals and provide lists of those jobs and chemicals to the Health and Safety Department.
- 2. Provide the training required by the Hazard Communication Standard and document training of employees in the safe handling of hazardous materials.
- Inspect engineering controls and personal protective equipment before each use.
 Health and Safety can help determine a suitable inspection plan for each application as needed.
- 4. Make daily surveys of the work area to ensure that safe practices are being followed. Advise employees of unsafe work practices on the first occasion and consider further violations as disciplinary violations.
- 5. Ensure required labeling practices are being followed. Labeling should be affixed to the container when it arrives. If the contents are transferred to another container, then all label information (manufacturer, product name, and product number) must also be affixed to the new container, so that all containers of the material, regardless of size, are labeled.
- 6. Enforce all applicable safety and health standards through periodic audits.
- 7. Before ordering a material, determine if a Material Safety Data Sheet exist on file. Request an MSDS for any material without one.
- 8. Send all new MSDSs to the Health and Safety Department after making a copy for the Employee Right-to-Know file.

2.4 Employee Responsibilities

- 1. Obey established safety rules and regulations
- 2. Use all safety procedures and personnel protective equipment as required by company procedures
- 3. Notify supervisor of the following:
 - Any symptoms or unusual effects that may be related to the use of hazardous chemicals,

- b. Any missing or unreadable labels on containers.
- c. Missing, damaged, or malfunctioning safety equipment.
- 4. Use approved labels on containers; do not remove labels (labels will be located in the warehouse).
- 5. Do not use unapproved containers for hazardous materials. (Are materials and containers compatible?)
- 6. Know where emergency equipment and first-aid supplies are located before considering a possibly dangerous task.
- 7. Know location of Material Safety Data Sheets (MSDSs). These will be located in the "Employee Right-to-know" station for the respective shop/job site.
- 8. Know what you are expected to do in case of an emergency. Before the commencement of any task, emergency considerations shall be made.

2.5 Shipping/Receiving Personnel Responsibilities

- Ensure MSDS are received with initial shipment of a hazardous material; if not, contact
 purchasing to request the appropriate MSDS and also call the Health and Safety
 Department to determine if there is an MSDS available until the requested MSDS
 arrives.
- 2. Ensure labels are affixed to all containers.
- 3. Store hazardous materials in designated locations.
- 4. Use proper personal protective equipment when handling hazardous materials.
- 5. Report damaged containers or spills to the appropriate Health and Safely Department immediately.
- 6. Request an MSDS from the manufacturer for any hazardous material that arrives in Findlay from a job. Also, a MSDS shall accompany any hazardous material that is sent to a job.

3.0 HAZARD DETERMINATION

OHM Corporation will rely on Material Safety Data Sheets from hazardous chemical suppliers to meet hazard determination requirements. Other relevant data from laboratory analyses, chemical reference materials, and chemical manufacturers', written evaluation procedures will be utilized when warranted. No other method shall be used to determine chemical hazard unless approved by the Health and Safety Department.

4.0 LABELING

The shipping and receiving supervisors will be responsible for seeing that all containers arriving at OHM Corporation are properly and clearly labeled. Shipping and receiving supervisors shall also check all labels for chemical identity and appropriate hazard warnings. If the hazardous chemical is regulated by OSHA in a substance specific health standard, the supervisor or department manager shall ensure that the labels or other forms of warning used are in accordance with the requirements of that standard. Any container that is not labeled shall be immediately labeled correctly after initial discovery.

Each supervisor or department manager shall be responsible for seeing that all portable containers used in their work area are properly labeled with chemical identity and hazard warning.

Supervisors or department managers shall also ensure that labels on hazardous chemical containers are not removed or defaced unless the container is immediately marked with the required information and that all labels are legible in English and prominently displayed on the container or readily available in the work area throughout each shift.

If any container is found and the contents cannot be identified, the supervisor or manager shall be contacted immediately. When proper identification is made, a label shall be affixed to the container immediately. If it is discovered that no MSDS is available, the manufacturer and the Health and Safety Department shall be contacted to assist in locating the proper MSDS. If there is no way to identify the material in the container, the container should be set aside, away from all personnel until it can be tested by the Health and Safety Department or laboratory personnel. Supervisors and managers shall communicate their findings or awareness of such containers to all personnel in the area and to those who enter later.

5.0 MATERIAL SAFETY DATA SHEETS (MSDSs)

Each supervisor or department manager at OHM Corporation will be responsible for maintaining a current MSDS relevant to the hazardous chemicals used in their area. The Health and Safety Department will be responsible for compiling the master MSDS file for the facility and aiding all shops/job sites with the completion and maintenance of their respective MSDS files.

All MSDSs will be readily available for review by all employees during each work shift. Each shop/job site will designate a clearly marked "Employee Right-to-Know" station where employees can immediately obtain a MSDS and the required information in an emergency.

Although manufacturers are required to provide employers with MSDSs on an initial chemical shipment, OHM Corporation purchasing agents (and supervisors purchasing their own material) shall request MSDSs and updates to MSDSs on all purchase orders. Supervisors and department managers that are without proper MSDSs shall be responsible for requesting this information from manufacturers for chemicals. A file of followup letters shall be maintained for all hazardous chemical shipments received without MSDSs.

6.0 EMPLOYEE INFORMATION AND TRAINING

It is the responsibility of the supervisor in charge of each employee to ensure that the employee is properly trained. Training employees on chemical hazards and chemical handling is accomplished at the time of initial employment at OHM Corporation, whenever a new chemical (or physical) hazard is introduced into the work area, and through ongoing formal and informal training programs. Additionally, chemical hazards are communicated to employees through daily, morning, shop specific safety meetings, which shall be documented according to topic, major points discussed, and names of those attending (attendance is mandatory). Also, biweekly hazardous chemical safety meetings will be prepared by the Health and Safety Department using similar documentation for shop areas. Attendance is mandatory for these meetings also. Documentation for shop safety meetings will be available in the respective Employee Right-to-Know stations and biweekly safety meeting documentation will be available in the Health and Safety Department to all employees for further referencing and questioning. Records of all formal training conducted at OHM Corporation are coordinated and maintained by the Training Department secretary.

At a minimum, OHM Corporation will inform employees on the following:

- The requirements of 29 CFR 1910,1200--Hazard Communication--Evaluating the potential hazards of chemicals and communication of information concerning hazards and appropriate protective measures to employees. This is accomplished in several different ways including, but no limited to, 40-hour OSHA Hazardous Waste Worker Training (29 CFR 1910.120), shop safety meetings, job site safety meetings, Health and Safety Department safety meetings, and formal and informal training about specific chemical hazards.
- The location and availability of the written hazard communication program, list of hazardous chemicals, and MSDS sheets--Notices will be periodically posted on the employee bulletin boards providing the location of the above material.
- Any operations in their work area where hazardous chemicals are present.
- What the company has done to lessen or prevent workers' exposure to these chemicals.

Employee training shall include at least:

- Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (monitoring instruments, visual appearance or odor), and acute and chronic health effects.
- The physical and health hazards of chemicals in the work area (accomplished through periodic physical and chemical hazard awareness sessions developed by the Health and Safety Department). These sessions shall serve as chemical hazards refreshers.

- The methods of preventing exposure to hazardous chemicals including the measures OHM Corporation has taken to protect the employees.
- Procedures to follow if OHM Corporation employees are exposed to hazardous chemicals (location of nearest phone, emergency eyewash, and shower will be included). These discussions shall include proper operating procedures for all emergency equipment.
- The details of the hazard communication program developed by OHM Corporation, including an explanation of the labeling system and the Material Safety Data Sheets, and how employees can obtain and use the appropriate hazard information.
- Standard operating procedures within each respective shop. OHM
 Corporation company policy determines what is considered standard
 operating procedures.
- Procedures for workers involved in non-routine tasks.

Each supervisor or department manager shall ensure that the above training is emphasized to OHM Corporation employees. The Health and Safety Department will ensure that each shop, department, and job site is properly informing and training all employees through daily group meetings and individual discussions. Whenever a new hazardous chemical is placed into use, the supervisor or department manager shall inform the employees of the hazards which that chemical may pose. The supervisor or manager shall also be responsible for obtaining and making available a MSDS for the new chemical.

7.0 HAZARDOUS NON-ROUTINE TASKS

Occasionally, employees at OHM Corporation are required to perform tasks which are considered to be non-routine. All tasks considered to be non-routine shall be carefully discussed among the supervisor and those performing the task. This safety briefing shall include all possible hazards that may be encountered while completing the task, including:

- Hazard recognition
- Chemicals involved and their hazardous properties
- Physical hazards
- Methods of avoiding all hazards (technical instruments, proper personal protective equipment, etc.)

The following is list of some of the non-routine tasks which may occur at OHM Corporation together with some information needed to complete the tasks safely.

- Confined Space Entry
 - Obtain confined space entry procedure/permit from Health and Safety Department and follow all protocol before beginning task. Complete and have supervisor sign permit before any work begins.

- Monitor atmosphere with explosimeter, oxygen meter, and any toxic gas meter as may be appropriate.
- Discuss specific chemical hazards.
- Discuss protective/safety measures the employee can take (e.g., Personal protective equipment and engineering controls), use of life lines, lock-out/tagout procedures, etc).
- Measures the company has taken to lessen the hazards including ventilation, respirator, presence of another employee, and emergency procedures.

Excavation, Trenching, and Shoring

- Obtain guidelines from Health and Safety Department before beginning task.
- Comply with all requirements set forth for this activity in 29 CFR Subpart P(excavating, trenching, shoring).
- Discuss specific chemical hazards.
- Follow confined space entry procedure above if trench is above shoulder height.
- Discuss protective/safety measures the employee can take.
- Review appropriate accident prevention steps.

• Decontamination of Equipment

- Determine possible contaminants and the hazards associated with them.
- Determine personal protection needed by contacting the Health and Safety Department.
- Alert all personnel in areas of contamination and decontamination
- Contain and secure all contaminated materials and decontamination materials.
- Contact the Health and Safety Department for proper disposal.

It is company policy that no OHM Corporation employee will begin work on any non-routine task without first receiving a safety briefing from their supervisor or a Health and Safety Department representative.

8.0 INFORMING CONTRACTORS

- Hazardous chemicals to which they may be exposed while performing a task including the following:
 - Chemical properties
 - Physical properties
 - Acute/Chronic health effects

- Location of "Employee Right-to Know" station which includes the following:
 - MSDS for work area
 - Hazard Communication Program
 - Other relevant safety material
- Precautionary measures to be taken to protect employees from chemical and physical hazards.
- Location of nearest emergency equipment (fire extinguisher, eyewash, shower, phone, first-aid kit, etc.)
- Procedures to follow in the event of employee exposure.
- Steps OHM Corporation has taken to reduce the risk of exposure to physical and chemical hazards including the following:
 - Safety meetings
 - Hazard Communication Program
 - Proper storage and labeling of hazardous chemicals
 - Health and Safety Department shop audits
- The methods used to label all hazardous chemicals.

The Health and Safety Department shall offer assistance in providing the above information to contractors working at OHM Corporation. On initial visit by a contractor to OHM Corporation, a "Contractor Right-to-Know" release form shall be completed. This form will state that the above information has been communicated to the perspective contractor.

APPENDIX C MSDS LIST

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BATURATED L	12.17 JOUID DENSITY	LIQUID HE	12.18 AT CAPACITY	LIQUID THERMA	12.19 L CONDUCTIVITY	LIQUID VI	2.20 SCOSITY
remperature (degrees F)	Pounds per cubic foot	Temperature (degrees.F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit-inch per hour- square foot-F	Temperature (degrees F)	Centipols
35	70.419	40	.316	20	.956	35	1:027
40	70.230	50	.317	10	.946	40	.967
45	70.040	60	.319	0	.937	45	.949
50	69.849	70	.321	10	.927	50	.914
55	69.660	80	.323	20	.917	55	.880
60	69.469	90	.325	30	.908	60	:848
65	69.270	100	.327	40	.898	65	.818
70	69.080	110	.329	50	.888	70	.790
75	68.889	120	.331	60	.879	75	.763
80	68.700	130	.333	70	.869	80	.738
.85	68.500	140	.335	80	.859	85	.713
90	68:309	150	.337	90	.850	90	.690
95	68.120	160	.339	100	.840	95	.666
100	67.919	170	.341	110	.830	100	.648
105	67.730	180	.343	120	.821	105	.628
110	67.530	190	.345	130	.811	110	.609
115	67.339	200	.347	140	.801	115	.591
120	67.139	210	.349	150	.792	120	.574
125.	66.950			160	.782	125	.558
130	66.750			170	.772	130	.542
135	66,559					135	.527
140	66.360]	140	.513
145	66.169				1	145	.499
150	65.969		· .	·	<u>l</u>	150	.486
155	65,770				i	155	.473
160	65,580		I I	,		100	.7/3

SOLUBILIT	12.21 Y IN WATER	SATURATED V	12.22 APOR PRESSURE	SATURATED V	12.23 APOR DENSITY	IDEAL GAS' H	12.24 IEAT CAPACITY
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch.	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal un per pound-F
77.02	.049	20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 200 210	.032 .048 .069 .099 .140 .195 .269 .368 .492 .656 .865 1.130 1.464 1.880 2.394 3.026 3.797 4.731 5.856 7.203	20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210	.00071 .00102 .00145 .00204 .00283 .00386 .00522 .00698 .00923 .01207 .01565 .02010 .02560 .03233 .04051 .05039 .06224 .07636 .09309 .11280	0 25 50 75 100 125 150 175 200 225 250 276 300 325 350 375 400 425 450 475 500 526 550 575 600	.178 .188 .198 .207 .217 .226 .235 .244 .252 .261 .289 .277 .285 .292 .300 .307 .314 .320 .327 .333 .340 .345 .351

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	12.17 IQUID DENSITY		12.18. AT CAPACITY	LIQUID THERMA	12.19 L CONDUCTIVITY	LIQUID VI	2.20 SCOSITY
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit-inch per hour- square foot-F	Temperature (degrees F)	Centipolse
-30 -20 -10 0 10 20 30 40 50 60 70 80 80 90 100 110	57.180 56.870 56.550 56.240 55.930 55.620 55.310 54.990 54.680 54.370 54.080 53.750 53.430 53.120 52.810 52.500	0 5 10 15 20 25 30 35 40 45 50 65 60 65 70 75 80 85 90	.396 .397 .399 .400 .402 .403 .404 .406 .407 .409 .410 .411 .413 .414 .415 .417 .418 .420 .421	0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 180 170 180	1.026 1.015 1.005 .994 .983 .972 .962 .951 .940 .929 .919 .908 .897 .886 .876 .865 .854	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95	1.024 .978 .935 .894 .857 .821 .788 .757 .727 .700 .673 .649 .625 .603 .582 .562 .544 .526 .509
		105 110 115 120 125	.425 .427 .428 .429 .431	210	.800	150	

	12.21 SOLUBILITY IN WATER		12.22 SATURATED VAPOR PRESSURE		12:23 /APOR DENSITY	12:24 IDEAL GAS HEAT CAPAC	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal un per pound-F
68.02	.050	0	.038	o	.00070	0	.228
		10	.057	10	.00103	25	.241
•		20	,084	20	.00150	50	.255
		30	.121	30	.00212	75	.268
		40	.172	40	.00296	100	.281
	-	50	.241	50	.00405	125	.294
		60	.331	60	.00547	150	.306
		70	.449	70	.00727	175	,319
		80	.600	80	.00954	200	.331
		90	.792	90	.01237	225	.343
	ľ	100	1.033	100	.01584	250	.355
	,	110	1.332	110	.02007	275	.367
		120	1,700	120	.02518	300	.378
	<u> </u> '	130	2.148	130	.03127	325	.389
	,	140	2,690	140	.03850	350	.400
		150	3.338	150	.04700	375	.411
	ì ·	160	4,109	160	.05691	400	.422
		170	5.018	170	.06840	425	.432
		180	6.083	180	.08162	450	.443
		190	7.323	190	.09675	475	.453
		200	8.758	200	.11400	500	.462
		210	10,410	210	.13340	525	.472
			10.410	2.0		550	.482
		i	[l ·	575	.491
			,		l i	600	.500

APPENDIX D

CONFINED SPACE ENTRY PROCEDURES



HEALTH & SAFETY PROCEDURES

CONFINED SPACE ENTRY

PROCEDURE NUMBER 24

Page 1 of 5

LAST REVISED 12/92

APPROVED BY: JFK/FHH

1. OBJECTIVE

OHM Remediation Services Corp. (OHM) shall enforce this procedure as a means of protecting the health and safety of workers while entering, working in, and exiting confined spaces. Before entry, the worker will be made aware of the hazards of confined space work and the safe work practices necessary.

2. PURPOSE

The purpose of this procedure is to establish confined space entry standards for all OHM employees. This procedure meets and exceeds the guidelines in the Occupational Safety and Health Administration (OSHA) proposed Confined Space Entry standard 29 CFR 1910.146.

3. PROCEDURE

- 3.1 <u>Permitting</u> All "permit required confined space" entries will be proceeded by the completion of a confined space entry permit. The OHM confined space entry permit follows this procedure.
- 3.2 <u>Written Rescue Procedure</u> Prior to any confined space work, a site specific written rescue plan will be developed that addresses minimum requirements.

3.2.1 Rescue

- The equipment required to rescue an unconscious victim must be in-place before the first person enters the confined space.
- A trained stand-by person will be assigned to each confined space with a fully charged SCBA or airline and egress unit.
- The stand-by is to keep life lines clear, to maintain contact with all workers within the confined space and to summon help if needed.
- The stand-by must never enter the confined space unless relieved by rescue assistance.
- The stand-by may attempt rescue by lifeline while waiting for rescue assistance.

4. PERMIT SYSTEM

All confined space entry permits will address the following:

- Location
- Hazards-Isolation
- Lockout / Tagout
- PPE and special equipment
- Air monitoring requirements and results of such monitoring
- Personal monitoring
- Training required
- Stand-by persons to be present as alternates
- Communication procedures
- Emergency / rescue procedures
- Confined space classification
- Posting of notification

6. TRAINING

OHM will train employees involved in confined space entry and confined space rescue on the hazards associated with confined space work. This training will, as a minimum, cover the following:

- · Hazard recognition
- · Emergency entry and exit
- · Respirator use
- · First aid
- · Lock-out procedures
- · Safety equipment
- · Rescue drills
- · Permit system
- · Work practices
- · Communication requirements

7. TESTING AND MONITORING

7.1 <u>Initial Monitoring</u> - Entry into a confined space is prohibited until initial testing of the atmosphere for oxygen content and toxic gas concentration is conducted from the outside. Initial monitoring gives critical information concerning oxygen level, flammability and toxicity hazards.

- 7.2 Hot Work All hot work is prohibited in confined space where monitoring indicates that there are flammable compounds in excess of 10% of the Lower Explosive Limit (LEL). The monitoring device will be intrinsically safe for flammable atmospheres or explosion proof. If hot work must be performed in the confined space, a hot work permit must be completed. Cutting gas cylinders and welding machines will not be taken into confined space.
- 7.3 <u>Calibration</u> All monitoring equipment will be calibrated before each use and those calibrations will be logged in the equipment records. The calibration record will be kept for a minimum of one year from the date of measurement.
- Oxygen Requirement The percent oxygen for entry will not be less than 19.5% for confined space entry without supplied air respirators. If elevated (greater than 22%) oxygen levels are detected, the confined space must be ventilated prior to any "hot work". Any oxygen reading above or below 20.9% will be reported to the site safety officer before further entry is attempted.
- 7.5 <u>Permissible Exposure Limits (PEL)</u> OHM employees will be provided with and will be required to properly use protective clothing and respiratory protective equipment when contaminants in the atmosphere reach or exceed the PEL. The personal protective equipment (PPE) selected will reduce exposure to contaminants to acceptable levels.

8. <u>LABELING AND POSTING</u>

- 8.1 Any signs warning of dangers in the work area will be in English and the predominant language of any non-English reading workers.
- 8.2 All entrances to confined spaces at OHM facilities and on-going projects will have appropriate signs posted. The signs should include the following, if applicable:

Danger Confined Space Entry Entry by Permit Only

The following statements shall be added where necessary:

Respirator Required for Entry
Lifeline Required for Entry
Hot Work Permitted
or
No Hot Work

8.3 Emergency numbers will be conspicuously posted near the work area or at the telephone nearest the work area.

9. SAFETY EQUIPMENT AND PPE

The site safety officer or site supervisor will determine and list on the confined space permit the necessary safety equipment and PPE. The site supervisor will ensure that the safety equipment is properly used and is maintained in the proper working condition. These items may include, but are not limited to:

- Eye / face protection
- · Head protection
- · Foot protection
- · Protective clothing
- · Hearing protection
- · Respiratory protection
- · Safety bells/Alarms
- Harnesses
- · Lifelines
- Wrist harnesses
- · Life jackets
- · Fall nets
- · Barricades
- · Retrieval systems

10. WORK PRACTICES

- Purge and Ventilation During purge and ventilation procedures, blower controls will be a safe distance from the confined space. Initial testing is to be conducted prior to purge/ventilation to determine what precautions are necessary. If a flammable atmosphere exists, all electrical equipment must be intrinsically safe or explosion proof. Continuous ventilation will be required when welding or painting in a confined space, or where a toxic atmosphere may form from desorption from walls, or evaporation of chemicals. Ventilation systems must not prevent egress from the area or interfere with communications.
- 10.2 <u>Isolation / Lock-out / Tag-out</u> Each confined space will have isolation procedures specifically developed. The confined space must be completely isolated from all systems by physical disconnect, block and bleed, or blanking and tagging. Electrical systems must be de-energized and locked-out. All systems should be checked for stored energy before any entry into confined space is attempted.

Oleaning - Cleaning procedures will be reviewed and approved by the qualified person. Initial cleaning will be conducted from outside the tank whenever possible to minimize exposures to employees. Cleaning may be accomplished by flushing with water or chemical cleaners. At times the use of a "Butterworth" cleaning head may be required. In any case, gross material must be removed before entry is performed.

11. EQUIPMENT AND TOOLS

All equipment that is used in confined space will be inspected and as a minimum, will meet the following requirements:

- · Hand tools will be kept clean and in proper working condition.
- Electric tools, equipment and lighting will be intrinsically safe or explosion proof for flammable atmospheres and be equipped with ground fault circuits interrupters (GFCI).
- Extension cords will be industrial quality, 3 wire and 12 gauge as a minimum.
- · Cylinders of compressed gas will never be taken into a confined space, with the exception of SCBA tanks or life saving equipment.
- Ladder and scaffolding will meet or exceed OSHA requirements in 29 CFR 1910.25-28.



Permit Authorized by (Signature):

CONFINED SPACE ENTRY PERMIT

			Permit No		
	a.m.	T a.	a.m. p.m.		
Good on this Date Only:	-rom:				
Location:	Project I	No	 		
Workers Authorized Entry: Work Monit	tors:	Work Monitors	:		
Description of Job or Special Procedures:				······································	•
				 ·	
Employee Training and Pre-Entry Briefing		•	(
 Safe Entry and Rescue Training Conducted on; 		(Date)			
2. Mandatory Pre-Entry Briefing Conducted on:		(Date)			
3. Does this Job Require Special Training?	Yes 🔲 N	• 🗆			
Contractor Notification	•				
Contactor Notified of: Permit Conditions	Potental Hazarda		N/A		
Lighting Requirements Special To	ools/Equipment	Communica	ition Devices		
				<u> </u>	
1. Are All Electrical Devices Intensically Sale? 2. Have All Power Cords and Tools Been Visually Inst	pected?	Yes 🔲 Yes 🔲	25 25		
Vessel Preparation					
1. Work Area Isolated with Signs/Barriers?		Yes 🖂	2 2	•	
All Energy Sources Locked/Tagged Out? All Input Lines Capped/Blinded?		Yes 🗀	No [
4. Vessel Contents Drained/Flushed/Neutralized?		Yes 🖂	2 2		
5. Vessel Cleaned/Purged? 6. Ventiation Provided 30 Minutes Before Entry?		Yes	№ □		
Pre-Entry Atmospheric Testing		T.	me:	Initials:	
Reading: 1. Test for Oxygen Content:	%02				
2. Test for Flammable Concentration:	% LEL ppm of (TLV:	_ , -			
3. Test for Toxic Concentration: 4. Test for Heat Stress Hazard:	eFeC	WBGT			
Emergency/Rescue Procedures					
1. Location of Written Emergency/Rescue Plant					
2. Type of Emergency/Rescue Team Required: On	-Site	Off-Site		_ Phone No	
Safety Equipment					
Personnal Protective Equipment Required:	Area Salety Equ	ipment/Required:	·		
1. Self-Contained Breatting Apparatus Required?	Yes 🔲 N	• 🗆			
2. Portable Atmospheric Monitor Required?	Yes 🗀 N	• 	Type:	· ·	
. The second of				nermit.	